

Date: Wednesday, 7/5/2006 2:41:56 PM
User: Kim Johnston

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services	Drawing Name : 350/355 AS X-TUBE FWD
Job Number : 27825	
Estimate Number : 12485	
P.O. Number : N/A	Part Number : D350748101
This Issue : 7/5/2006 S.O. No. : N/A	Drawing Number : IIN D350-748 P5 PREL <i>CP 06-07-05</i>
Prsht Rev. : NC	Project Number : N/A
First Issue : N/A Type : LANDING GEAR	Drawing Revision : PREL
Previous Run : 27824	Material : N/A
Written By : <i>[Signature]</i>	Due Date : 7/30/2006 Qty: 1 Um: Each
Checked & Approved By : <i>[Signature]</i> <i>06-07-05</i>	
Comment : Est Rev:A New Issue 06-07-05 JLM	

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
----------------	------------------------------	----------------------

1.0	DC	DOCUMENT CONTROL
-----	----	------------------



Comment: Photocopy bluefile & type labels per PPPD350-748-101 CHG001 *KS 06.10-02* ①

2.0	27825A	X-TUBE AS 350/355 HI FWD
-----	--------	--------------------------



Comment: Sub-Component X-TUBE AS 350/355 HI FWD

3.0	PACKAGING 1	PACKAGING RESOURCE #1
-----	-------------	-----------------------



Comment: PACKAGING RESOURCE #1
Pick Packing Kit

4.0	D35001	350 SADDLE
-----	--------	------------



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)
350 SADDLE
Batch: *028096* ✓

5.0	D35011	BUSHING
-----	--------	---------



Comment: Qty.: 16.0000 Each(s)/Unit Total : 16.0000 Each(s)
BUSHING
Batch: *M28127* ✓

6.0	AN46A	Bolt
-----	-------	------



Comment: Qty.: 16.0000 Each(s)/Unit Total : 16.0000 Each(s)
Bolt
Batch: *M101418* ✓ *PB06/09/28*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Mfg / Design Mgr	Approval QC Inspector

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Design Mgr	Approval QC Inspector
			Initial Design Mgr	Action Description Design Mgr	Sign & Date			

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

NOTE: Date & initial all entries

QA: N/C Closed: _____ Date: _____

Date: Wednesday, 7/5/2006 2:41:57 PM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 350/355 AS X-TUBE FWD

Job Number: 27825

Part Number: D350748101

Job Number:



Seq. #:

Machine Or Operation:

Description :

7.0

AN441A

bolt



Comment: Qty.: 8.0000 Each(s)/Unit Total : 8.0000 Each(s)

bolt

Batch: M101538 ✓

8.0

AN532A

Bolt



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Bolt

Batch: M101648 ✓

9.0

AN960JD416

Washer



Comment: Qty.: 32.0000 Each(s)/Unit Total : 32.0000 Each(s)

Washer

Batch: M19185 ✓

10.0

AN960JD516

Washer



Comment: Qty.: 8.0000 Each(s)/Unit Total : 8.0000 Each(s)

Washer

Batch: M101369 ✓

11.0

MS21042L4

Nut



Comment: Qty.: 24.0000 Each(s)/Unit Total : 24.0000 Each(s)

Nut

Batch: M19099 ✓

12.0

MS21042L5

Nut



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Nut

Batch: M101648 ✓

13.0

QC4

INSPECT 100% KITS FOR COMPLETENESS



Comment: INSPECT 100% KITS FOR COMPLETENESS

06/09/28
06/10/03 (1)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Mfg / Design Mgr	Approval QC Inspector

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Design Mgr	Approval QC Inspector
			Initial Design Mgr	Action Description Design Mgr	Sign & Date			

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes ☒ No ☐ DQA: DP Date: 06/11/08

NOTE: Date & initial all entries

QA: N/C Closed: _____ Date: _____

Date: Wednesday, 7/5/2006 2:41:57 PM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 350/355 AS X-TUBE FWD

Job Number: 27825

Part Number: D350748101

Job Number:



Seq. #:

Machine Or Operation:

Description :

14.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D350-748-101

Location:

PPP Rev:

Draft *LB 06/11/07* *(1)*

15.0

DC

DOCUMENT CONTROL



Comment: DOCUMENT CONTROL

Inspection Level 21

(1)
A 06/11/08

Job Completion



il 06/11/08

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Mfg / Design Mgr	Approval QC Inspector

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Design Mgr	Approval QC Inspector
			Initial Design Mgr	Action Description Design Mgr	Sign & Date			

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

NOTE: Date & initial all entries

QA: N/C Closed: _____ Date: _____

3.10 Apply a continuous bead of Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class B2 sealant in the following locations as per Figure 6:

- A) Along saddle/crosstube interface.
- B) Between the saddle flanges.
- C) Along saddle/skidtube interface.

4.0 WEIGHT AND BALANCE

The following weight and balance information is for Dart crosstube installations only. This data should be similar to the existing installation. Differences from the parts removed are the responsibility of the installer.

DART CROSSTUBE	FWD/AFT	WEIGHT	STA	MOMENT
D350-748-101	Fwd	35.2 lb (16.0 kg)	106.3 in (2.70 m)	3742 lb-in (43.2 kg-m)
D350-748-201	Aft	34.7 lb (15.7 kg)	162.4 in (4.12 m)	5635 lb-in (64.7 kg-m)

5.0 PARTS LIST

Qty -101	Qty -201	Part Number	Description
X		D350-748-101	CROSSTUBE INSTALLATION, AS 350/355 HIGH FWD
	X	D350-748-201	CROSSTUBE INSTALLATION, AS 350/355 HIGH AFT
1		D350-748-141	CROSSTUBE ASSEMBLY, AS 350/355 HIGH FWD
	1	D350-748-241	CROSSTUBE ASSEMBLY, AS 350/355 HIGH AFT
*2	*2	D3502-1	SUPPORT
*2	*2	D2856-400-710	ABRASION STRIP
*1	*1	AELS-1032-225	INSERT
*2	*2	MS21920-20	CLAMP
*1	*1	MS27039-1-10	SCREW
*1	*1	AN960JD10	WASHER
4	4	D3500-1	SADDLE
16	16	D3501-1	BUSHING
16	16	AN4-6A	BOLT
8	8	AN4-41A	BOLT
4	4	AN5-32A	BOLT
32	32	AN960JD416	WASHER
8	8	AN960JD516	WASHER
24	24	MS21042L4	NUT (OR MS21042-4)
4	4	MS21042L5	NUT (OR MS21042-5)

* REFERENCE ONLY. PARTS ARE INCLUDED IN D350-748-141/241 ASSEMBLIES ABOVE

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 27825

• COPYRIGHT © 2006 BY DART AEROSPACE LTD. •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Revision: A

Date: 06.05.08

Date: Wednesday, 7/5/2006 2:42:11 PM
 Kim Johnston

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : X-TUBE AS 350/355 HI FWD
 Job Number : 27825A
 Estimate Number : 12484
 P.O. Number : N/A Part Number : D350748141
 This Issue : 7/5/2006 S.O. No. : N/A Drawing Number : D350-748-141 PREL
 Prsht Rev. : NC Project Number : N/A
 First Issue : N/A Type : LANDING GEAR Drawing Revision : PREL
 Previous Run : 27824A Material : N/A
 Due Date : 7/30/2006 Qty: 1 Um: Each
 Written By : HJ 06 07.05
 Checked & Approved By : HJ 06 07.05
 Comment : Est Rev:A New Issue 06-07-05 JLM

Additional Product

Job Number:



Seq. #:

Machine Or Operation:

Description :

1.0

DC

DOCUMENT CONTROL



Comment: DOCUMENT CONTROL

Photocopy bluefile and create labels as per PPP D350-748-141 CHG001

N/A

2.0

D6017115

Crosstube Material



D6015-125



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Crosstube Material

D6017-115

2.339" OD X 2.000" ID

Batch: B27318 ✓

BG 06-07-15

1

3.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Fill tube with sand & install plugs DT N/A on both ends as per Folio FA648

2-Turn first side as per Folio FA648

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D350-748-141.

BG 06-07-15

1

4.0

QC1

INSPECT ALL DIM TO DIM SHEET



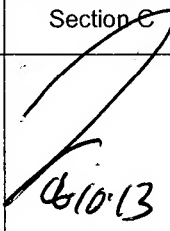

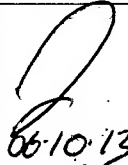


Comment: INSPECT ALL DIM TO DIM SHEET

BG 06-07-15

1

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Mfg / Design Mgr	Approval QC Inspector

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Design Mgr	Approval QC Inspector
			Initial Design Mgr	Action Description Design Mgr	Sign & Date			
06.08.17	3	Some taper dimensions do not match dwg	 06.08.17 per QSI 042	Part is OK per attached DS email	 08/07/16	 06/10/13	 06.08.17 per QSI 042	 06/10/13

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes ☒ No ☐ DQA: ☒ _____ Date: 06/11/08

NOTE: Date & initial all entries

QA: N/C Closed: _____ Date: _____

Date: Wednesday, 7/5/2006 2:42:11 PM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE AS 350/355 HI FWD

Job Number: 27825A

Part Number: D350748141

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Turn second side as per Folio FA648

2-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D350-748-141. *BG 06.07.15 1*

6.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

BG 06.07.15 1

7.0

QC8

SECOND CHECK



Comment: SECOND CHECK

MS 06/07/15 1

8.0

OUTSIDE SERVICE

OUTSIDE SERVICES



Comment: Sub-Contracting OUTSIDE SERVICES

Issue P/O: *1709*

Heat Treat to min 180 KSI As per Dwg D350-748-141 *u*

Sand Blast tube after Heat Treat

Possible Supplier: Vac Aero

Ensure Certificate of Conformity is attached

06.07.15

9.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Receive & Inspect For Transit Damage

Ensure certificate of conformaty is attached

LB 06/07/31



10.0

QC6

DIMENSIONAL CHECK



Comment: DIMENSIONAL CHECK

06.09.06

Positive Recall

11.0

BENDING

BENDING MACHINE



Comment: BENDING MACHINE

Bend tube as per Dwg D350-748-141 using CNC bender program *NIA* and Folio FT *NIA*

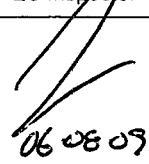
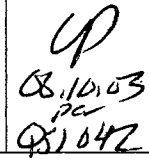
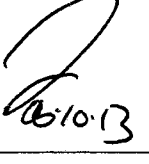
06.08.04

11.1

QC6 dimension check

06.09.07

(PTO)

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Mfg / Design Mgr	Approval QC Inspector	
06.08.09	11.1	Add Qc 6 before drilling. Perm. Change					 06.08.09	
06.10.03	14	CAD Plate and Magnetic Particle Inspect per DBS-74B-141 Rev Acceptable to CAD plate to spec AMS-QQ-P4163 See attached DS email				 06.10.03 per Q1042	 06.10.03	

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Design Mgr	Approval QC Inspector
			Initial Design Mgr	Action Description Design Mgr	Sign & Date			

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

NOTE: Date & initial all entries

QA: N/C Closed: _____ Date: _____

Date: Wednesday, 7/5/2006 2:42:11 PM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE AS 350/355 HI FWD

Job Number: 27825A

Part Number: D350748141

Job Number:



Seq. #:

Machine Or Operation:

Description :

12.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Remove all marks from tube within limits of D350-748-141

2-Drill Tube as per Dwg D350-748-141

3-Deburr

4-Engrave Part # and Batch # as per Dwg D350-748-141

DP 06-8-9

13.0

QC5

DIMENSIONAL CHECK



Comment: DIMENSIONAL CHECK

06-08-24

14.0

OUTSIDE SERVICE

OUTSIDE SERVICES



Comment: Sub-Contracting OUTSIDE SERVICES

Liquid Penetrant Inspection as per QSI 038

Issue P/O: 1918-2000

LPI as per ASTM 1417 Level 2

Attach copy of NDT results to work order

06-08-24
06-09-11
* SEE DEVIATION

15.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Inspect for transit damage Ensure copy of NDT results attached to work order.

06-09-28

16.0

QC6

DIMENSIONAL CHECK



Comment: Inspect for damage & ensure results are as per Dwg D350-748-241

06-09-28

17.0

SPRAY PAINTING

SPRAY PAINTING




Comment: SPRAY PAINTING

1-Prime inside crosstube as per QSI 005 4.2

PRIME OUTSIDE OF CROSSTUBE PER QSI 005 4.2

MA 06-08-09

06-09-25

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Mfg / Design Mgr	Approval QC Inspector
06.09.25	17	PRIME INSIDE & OUTSIDE OF TUBE THEN PAINT OUTSIDE PER QSI 665 4.2				CP 06.09.25 PER QSI 642	 06-10-13
	19	PER DWG D350-748-141 Rev. C					

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Design Mgr	Approval QC Inspector
			Initial Design Mgr	Action Description Design Mgr	Sign & Date			

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

NOTE: Date & initial all entries

QA: N/C Closed: _____ Date: _____

Date: Wednesday, 7/5/2006 2:42:12 PM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE AS 350/355 HI FWD

Job Number: 27825A

Part Number: D350748141

Job Number:



Seq. #:

Machine Or Operation:

Description :

18.0

QC14

Inspect Spray Paint



Comment: Inspect Spray Paint

Then, Wrap in plastic bag to protect from scratches

N/A 2

19.0

POWDER COATING

PAINT

POWDER COATING



Comment: POWDER COATING

PAINT OUTSIDE OF CRUSSTUBE PER QSI 005 4.2

Powder Coat White Gloss (Ref: 4.3.5.1) as per QSI 005 4.3

UP 06.09.25

20.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

PAINT

UP 06.09.25

21.0

D35021

SUPPORT



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

SUPPORT

Batch: B28089

✓

25 06-08-09

B27874

IT 06-10-31

*

22.0

D2856400

Abrasion Strip



Comment: Qty.: 1.2401 f(s)/Unit Total: 1.2401 f(s)

Abrasion Strip 7.10" long x2

Batch: B27547

✓

25 06-08-09

B28258

IT 06-10-31

*

23.0

ALS41032225

Insert



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Insert

Batch: M100489

✓

25 06-08-09

M19393

IT 06-10-31

*

24.0

AN960JD10

Washer



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Washer

Batch: M100743

✓





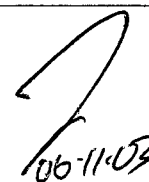
25 06-08-09

M100743

IT 06-10-31

*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Mfg / Design Mgr	Approval QC Inspector

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Design Mgr	Approval QC Inspector
			Initial Design Mgr	Action Description Design Mgr	Sign & Date			
06-11-03	21.0 ↓ 26.0	All hardware was disassembled - After ground res. test.		Replace with new hardware.	 06-11-03	 06-11-03	 06-11-03	 06-11-03

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes ☒ No ☐ DQA:  Date: 06/11/08

NOTE: Date & initial all entries

QA: N/C Closed: _____ Date: _____

Date: Wednesday, 7/5/2006 2:42:12 PM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE AS 350/355 HI FWD

Job Number: 27825A

Part Number: D350748141

Job Number:



Seq. #:

Machine Or Operation:

Description :

25.0

MS2192020

Clamp (per MIL-DTL-8783C)



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Clamp (per MIL-DTL-8783C)

Batch: M15936

~~27 06 08 09~~

M102440

27 06 10 31 *

26.0

MS2192020

Screw



Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s)

Screw

Batch: M18836

~~27 06 08 09~~

M18836

27 06 10 31 *

27.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Install Ground wire Insert, then insert screw and washer

2-Install Abrasion strips as per Dwg D350-748-141 & QSI 035.

2b - Spray inside of tube with LPS3 M101915

3-Install supports as per Dwg D350-748-141, Torque to 60-80 IN-LBS

~~27 06 08 09~~

A.M 06/11/03

27 06 10 31

28.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

DP 689

06/11/03

29.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D350-748-241

Location:

PPP Rev:

N/A

30.0

DC

DOCUMENT CONTROL



Comment: DOCUMENT CONTROL

Inspection Level 21

06/11/08

Job Completion



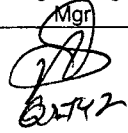
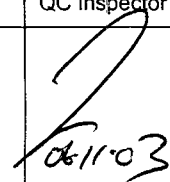
POSITIVE RECALL

EFFECTIVE 06/11/08

RELEASED 06/11/08

Verification of parts

Verification of dims on tube

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Mfg / Design Mgr	Approval QC Inspector	
06/11/03	270	Spary inside of tube with LPS3, after ASS'y. To be done in F.P. cell. perm change to estimate: Dwg.					 06/11/03	

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Design Mgr	Approval QC Inspector
			Initial Design Mgr	Action Description Design Mgr	Sign & Date			

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

NOTE: Date & initial all entries

QA: N/C Closed: _____ Date: _____

PRELIMINARY ISSUE

DESIGN <i>90</i>	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO. D350-748-141	REV. B SHEET 1 OF 3
DATE 06.06.30	TITLE CROSSTUBE (AS 350/355 HI FWD)		SCALE NTS
A	06.03.31	NEW ISSUE	
B	06.06.30	ADD D6017-115 & PRIME AND PAINT	

QTY	P/N	DESCRIPTION
X	D350-748-141	CROSSTUBE ASSEMBLY (AS 350/355 HI FWD)
1	D6017-115	CROSSTUBE (OR D6015-125)
2	D3502-1	SUPPORT
2	D2856-400-710	ABRASION STRIP
1	AELS-1032-225	INSERT
1	AN960JD10	WASHER
2	MS21920-20	CLAMP
1	MS35206-344	SCREW

New Rev.

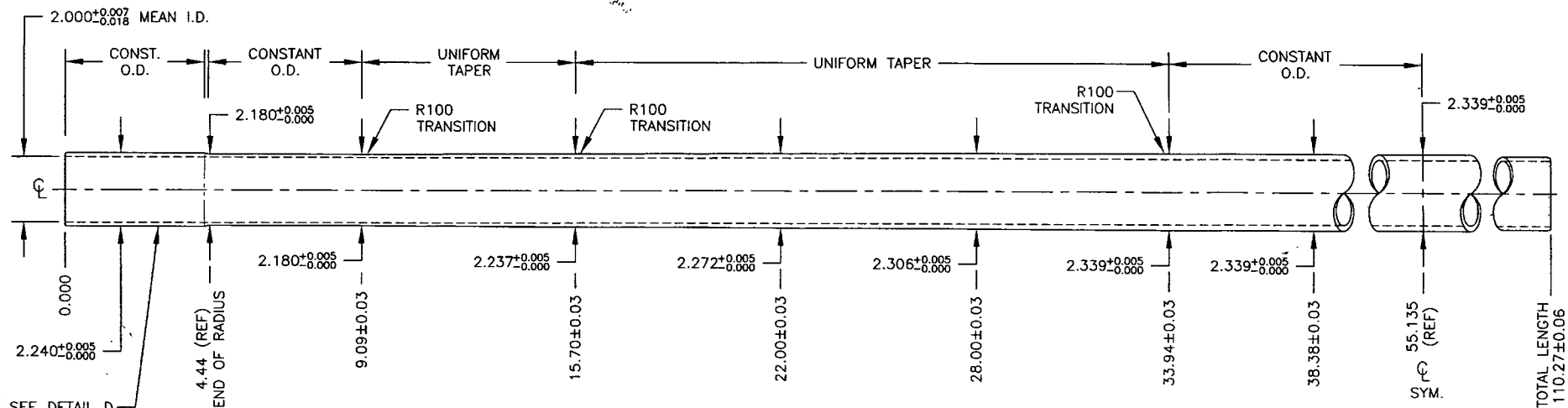
D350-748-141 CROSSTUBE:

- MATERIAL: MANUFACTURED FROM D6017-115 OR D6015-125
FINISHED LENGTH = 110.27±0.06
- MACHINE PER MACHINING DETAIL ON PAGE 3. BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALLY. TRANSITIONS SHOULD BE SMOOTH. NOTE: ALL HOLES ARE DRILLED AFTER BENDING.
- SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- HEAT TREAT TO MIN. 180 KSI PER MIL-T-6736 AFTER TURNING
- LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- FINISH: POWDER COAT WHITE (4.3.5.2) OUTSIDE PER DART QSI 005 4.3.
PRIME INSIDE PER DART QSI 005 4.2.
OR
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.
- INSTALL D2856-400-710 ABRASION STRIP WITH A GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D3502-1 SUPPORT, PER QSI 035.
- TORQUE MS21920-20 CLAMPS 60 TO 80 IN-LB
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- ALL DIMENSIONS ARE IN INCHES
- PART IS SYMMETRIC ABOUT CENTERLINE EXCEPT FOR Ø0.297 HOLE.

SHOP COPY
RETURN TO
ENGINEERING
CONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. *27825A*

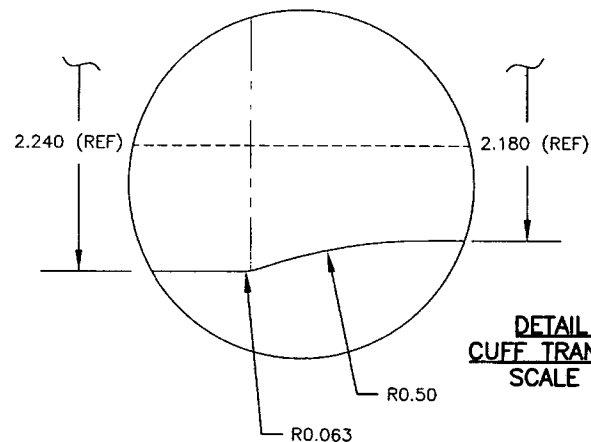
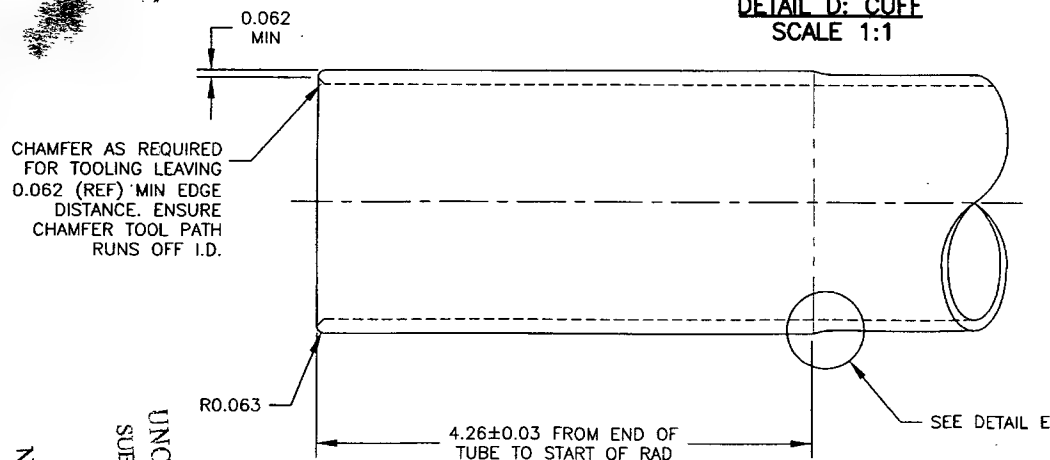
Copyright © 2006 by DART AEROSPACE LTD

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.



D350-748-141 MACHINING DETAIL

**DETAIL D: CUFF
SCALE 1:1**



PRELIMINARY ISSUE

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 27825 A

COPYRIGHT © 2006 BY DART AEROSPACE LTD.		DESIGN	DRAWN BY	DART DART AEROSPACE LTD. HAWKESBURY, ONTARIO, CANADA	
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.		CHECKED	APPROVED	DRAWING NO. D350-748-141	REV. B SHEET 3 OF 3
DATE 06.06.30		TITLE CROSSTUBE (AS 350/355 HI FWD)		SCALE 1:3	

DART AEROSPACE LTD		Work Order: 278254
Description: 35 CROSS TUBE 350 FWD		Part Number: D 350-298-141
Inspection Dwg: B	Rev: B	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☒ Prototype

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
0.062	$\pm .010$.062	/			
4.26	$\pm .030$	4.26	/			
2.240	$\pm .005$ $\pm .000$	2.242	/			
2.180	$\pm .005$ $\pm .000$	2.183	/			
2.180	$\pm .005$ $\pm .000$	2.185	/			
2.237	$\pm .005$ $\pm .000$	2.237	/			
2.272	$\pm .005$ $\pm .000$	2.275	/			
2.306	$\pm .005$ $\pm .000$	3.309	/			
2.339	$\pm .005$ $\pm .000$	2.339	/			-0.004"
2.339	$\pm .005$ $\pm .000$	2.341	/			
110.27	$\pm .060$	110.27	/			
0.062	$\pm .010$.062	/			Centre -0.004"
4.26	$\pm .030$	4.26	/			
2.240	$\pm .005$ $\pm .000$	2.241	/			
2.180	$\pm .005$ $\pm .000$	2.183	/			-0.004"
2.180	$\pm .005$ $\pm .000$	2.184	/			-0.004"
2.237	$\pm .005$ $\pm .000$	2.237	/			-0.003"
2.272	$\pm .005$ $\pm .000$	2.274	/			
2.306	$\pm .005$ $\pm .000$	3.310	/			-0.006"
2.339	$\pm .005$ $\pm .000$	2.339	/			-0.002"
2.339	$\pm .005$ $\pm .000$	2.342	/			

Measured by: BG
Date: 06.07.15

Audited by: MR
Date: 06/07/15

Prototype Approval:
Date:



Rev	Date	Change	Revised by	Approved
A		New Issue	KJ/JLM	

DART AEROSPACE LTD		Work Order: 27825A
Description:		Part Number: 0350-748-141
Inspection Dwg:	Rev: Prel.	Page 1 of 1

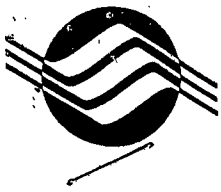
FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☒ Prototype

Drawing Dimension	Min. Tolerance Wall Thickness	Actual Dimension	Accept	Reject	Method of Inspection	Comments
Point 1 22.00" ± .030 length	min .0116"	A) .136	—		Ultrasonic thickness gauge	
		B) .122	—			
		C) .117	—			
		D) .119				
Point 2 55.135" length	min .150"	A) .155	—			
		B) .159	—			
		C) .151	—			
		D) .149	—			
Point 3 22.00" length	min .0116	A) .127	—			
		B) .119	—			
		C) .119	—			
		D) .123	—			

Measured by: 	Audited by: 	Prototype Approval:
Date: 06-07-18	Date: 06-07-18	Date:

Rev	Date	Change	Revised by	Approved
A		New Issue	KJ/JLM	



VAC AERO
INTERNATIONAL INC.

284

PACKING SLIP



HEAD OFFICE
1371 SPEERS ROAD, OAKVILLE, ONTARIO
CANADA L6L 2X5
TEL: (905) 827-4171 FAX: (905) 827-7489



QUEBEC DIVISION
7450 RUE VÉRITÉ STREET, ST. LAURENT, QUÉBEC
CANADA H4S 1C5
TEL: (514) 334-4240 FAX: (514) 334-6269

GST No.: R105468102

OAK 77605-1

07/28/2006

MM / DD / YYYY

PAGE: 1

1DAR01

BILL TO: DART AEROSPACE LTD.
1270 ABERDEEN ST.
HAWKESBURY, ON

SHIP TO: DART AEROSPACE LTD.
1270 ABERDEEN ST.
HAWKESBURY, ON

K6A 1K7

K6A 1K7

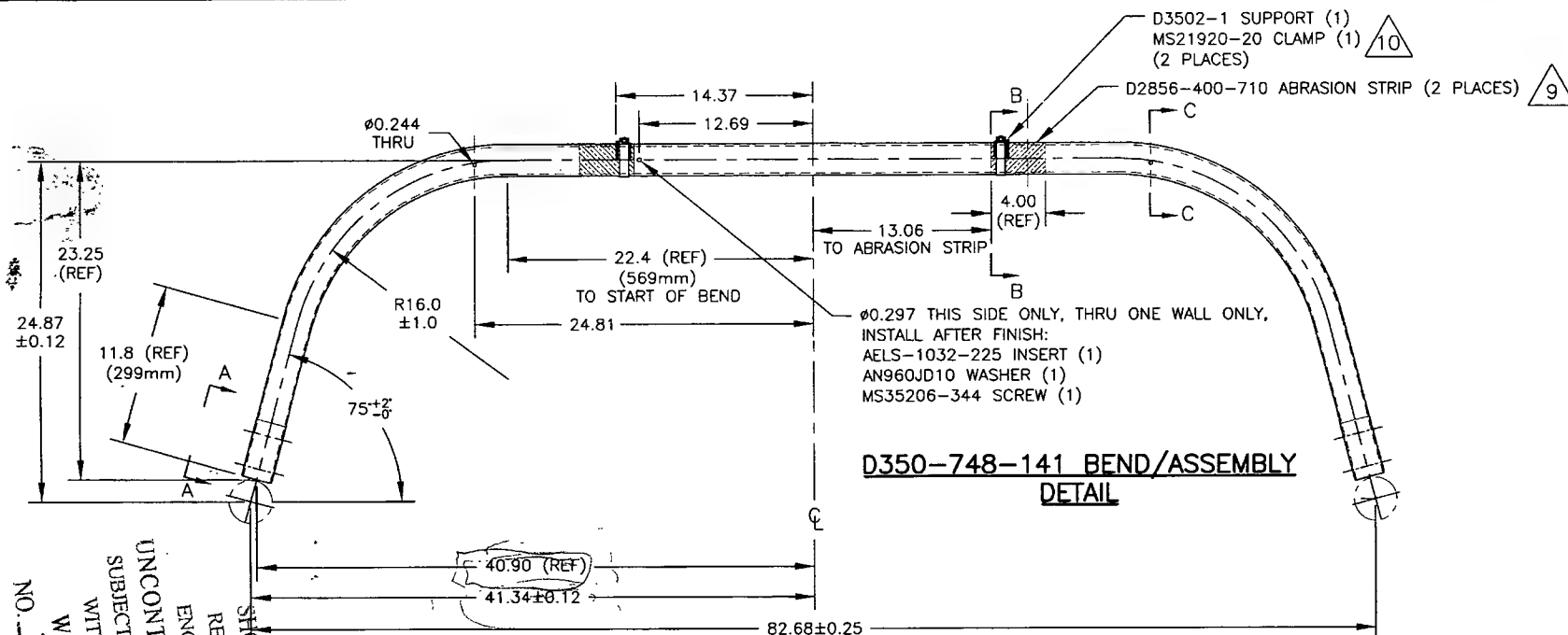
DATE SHIPPED	SHIP VIA	F.O.B.
07/28/2006		ORIGIN
CUSTOMER P/O No.	JOB No.	TERMS
1709		COD

LN	PART NO	DESCRIPTION	UOM	QTY ORDERED	QTY SHIPPED	B/O QTY
01	D350-CROSS TUBES	Process Specifications: Procedure: 4353 HEAT TREATED TO 180-200 KSI PER AMS 2759-1C MATERIAL: 4130 D350-748-141 B27823A, B27824A, B27825A, B27826A D350-748-241 B27830A, B27829A, B27827A, B27828A NOTE: SAND BLAST TUBES	EA	8	8	0
02	LC	LOT CHARGE 320LBS X \$2.26/LB		1	1	0

No claims for shortage in weight or count will be entertained, unless presented within 5 working days after receipt of materials by customer.

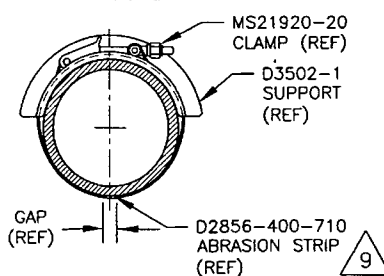


2.245 x 2.345

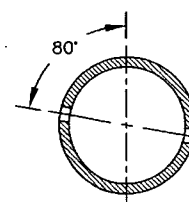


**D350-748-141 BEND/ASSEMBLY
DETAIL**

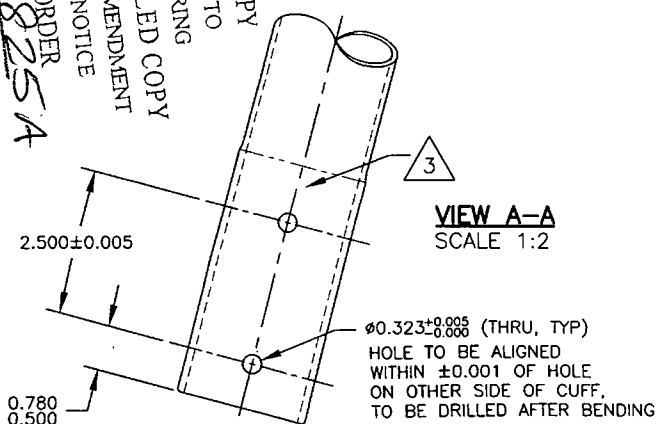
**SECTION B-B
SCALE 1:2**



**SECTION C-C
SCALE 1:2**



**VIEW A-A
SCALE 1:2**



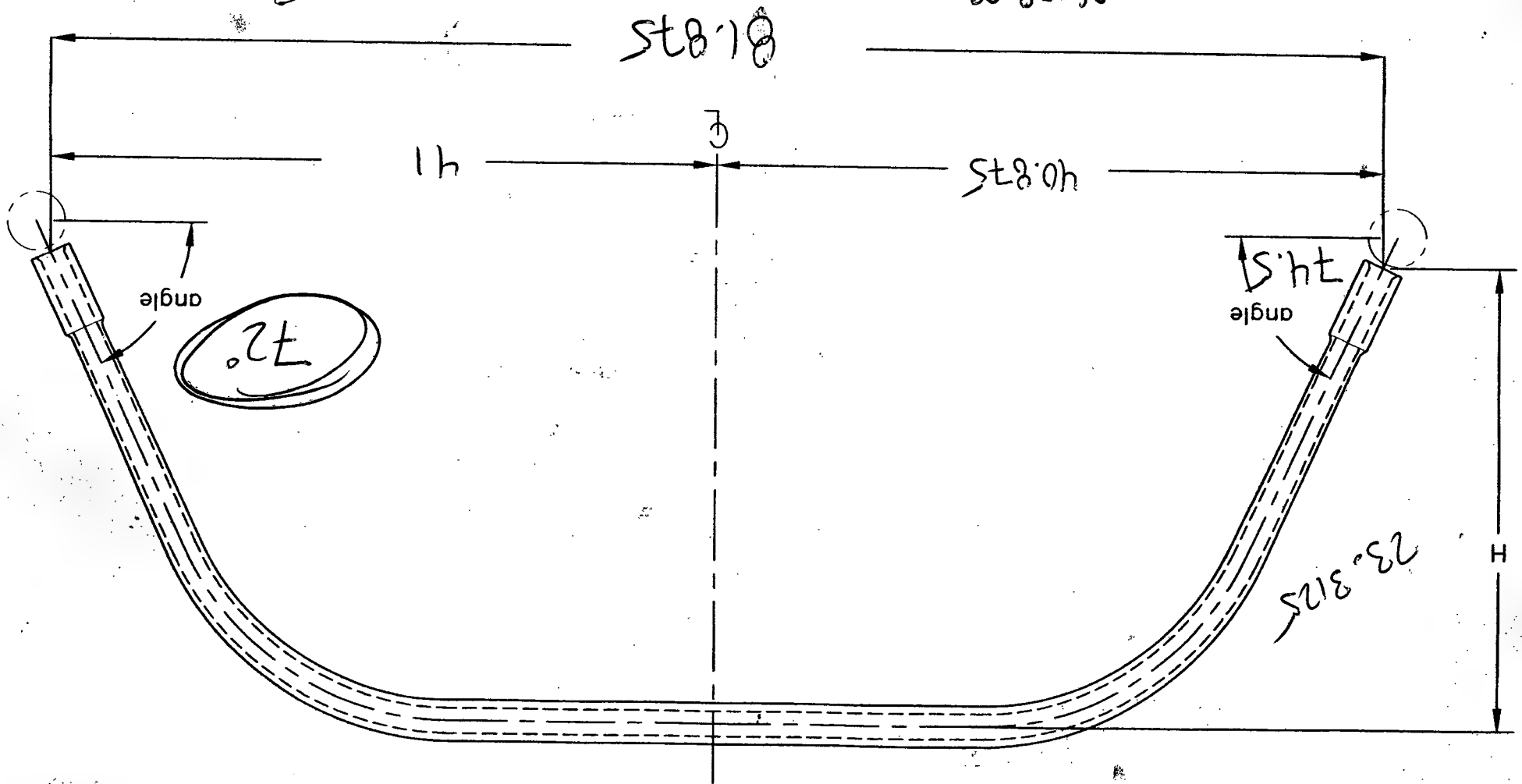
COPYRIGHT © 2006 BY DART AEROSPACE LTD.

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

DESIGN	40	DRAWN BY		DART	DART AEROSPACE LTD. MARKHAM, ONTARIO, CANADA
CHECKED		APPROVED		DRAWING NO. D350-748-141	REV. B SHEET 2 OF 3
DATE	06.06.30	TITLE	CROSSTUBE (AS 350/355 HI FWD)	SCALE	1:8

PRELIMINARY ISSUE

DATE: 06-08-09
 DESCRIPTION: 0350 748 141
 BATCH NO: 627825
 DRAWING: 350 Prelim Rev. 6
 H: 23.25
 1/2 SPAN: 40.90
 TOTAL SPAN: 81.8
 ANGLE: 25.2



06-09-07
 [Signature]



MICHIGAN

seamless tube

4026

MICHIGAN SEAMLESS TUBE

TEST REPORT

SOUTH LYON, MICHIGAN 48178

SH

ORDER NUMBER	CUSTOMER ORDER NUMBER	DATE	OFC	COM	DIW	NET BLB	GR BLB	ACCOUNT NUMBER	US	1J
020463	092105MC	09/22/05	22	00	16	16	01	02590001PCO		1J

S
O
L
D

T
O

FACTORY STEEL & METAL SUPPLY
14020 OAKLAND

DETROIT MI 48203

S
H
I
P

T
O

FACTORY STEEL & METAL SUPPLY
14020 OAKLAND AVENUE
DETROIT MI 48203

ROUTING
OPEN TOP/FULLY TARPED/FOB SOUTH LYON MI

PPD TRUCK

4130	ANALYSIS	ROUND	SHAPE	COLD DRAWN	FC	PER SPEC	10/14/05	REDUCED
SEAMLESS								

SECTION 1: YLD, AIM 90 PSI, CERT TO A519-96, MILT-6736BN NOTE-2
AMS-6360K W/DECARB LEVELS TO AMS-6371J, AMS-T-6736AN, 4130H &
AMS-2301J. T/R W/SHPT INCL CHEM, PHYS, DECARB, JOM, GRN SIZE & BRIN.
PRODUCE FROM 1-HEAT. MARK TO INCL GRADE, A519-96, MILT-6736BN
NOTE-2, AMS-T6736AN, AMS-6371J, AMS6360K & 4130H. PAINT ENDS RED.

ITEM	QUANTITY	O.D.	I.D.	WALL	LENGTH	WT/FT	WEIGHT	15:
		2.500		.250 AVG		6.008		10/

ITM	BALE	PCS	FTG	HEAT NO.	LENGTH	ITM	STATUS	PARTS
NUM	NUM							NUMBER
1	1 2	20	494	000017514	RAND 19'-26'	COM		
1	2 2	16	399	000017514	RAND 19'-26'	COM		
1	3 2	4	100	000017514	RAND 19'-26'	COM		

HEAT NO.	C	Mn	P	S	SI	NI	Cr	Mo	Cu	Al	RE
000017514	.300	.500	.007	.005	.350	.050	.990	.209	.070	.032	EF OF

HEAT NO.	ULT. STR. PSI	YIELD, PSI	% ELONG	HARDNESS	HYDRO TEST PSI	ULTRA SONIC %	EDDY CURRENT
000017514	117,283	109,053	21.8	BHN 241-255			OK

BEND	FLATTEN	FLARE	REV. FLATTEN

DECARB OR GRAIN SIZE 2
FREQ 0.000 SEV 0.000
MACROS S1, R1, C1
J1 J2 J3 J4 J5 J6 J7 J8 J9 J10
51 49 48 44 42 37 35 33 32 31

Guo L...

We hereby certify that the reported data a
according to Michigan Seamless Tube
those of its suppliers.

#21-538697



VAC AERO
INTERNATIONAL INC.

RELEASE NOTE

GST No.: R105468102

OAK 77605-1



HEAD OFFICE
1371 SPENCE ROAD, OAKVILLE, ONTARIO
CANADA L6L 2X5
TEL: (905) 827-4171 FAX: (905) 827-7499



2009 WYECROFT ROAD, UNIT B
OAKVILLE, ONTARIO
CANADA L6L 6J4
TEL: (905) 827-7377 FAX: (905) 827-1380



QUEBEC DIVISION
7450 RUE VERUÉ STREET, ST. LAURENT, QUÉBEC
CANADA H4S 1C5
TEL: (514) 334-4240 FAX: (514) 334-6269

07/28/2006

MM/DD/YYYY

PAGE: 1

BILL TO: 1DAR01
DART AEROSPACE LTD.
1270 ABERDEEN ST.
HAWKESBURY, ON

SHIP TO: DART AEROSPACE LTD.
1270 ABERDEEN ST.
HAWKESBURY, ON

K6A 1K7

K6A 1K7

DATE SHIPPED	SHIP VIA	F.O.B.
07/28/2006		ORIGIN
CUSTOMER P/O No.	JOB No.	TERMS
1709		COD

PART No.	DESCRIPTION	UOM	QTY ORD	QTY SHPD	TEST RESULTS
D350-CROSS TUBES		EA	8	8	
Process Specifications: Procedure: 4353 HEAT TREATED TO 180-200 KSI PER AMS 2759-1C MATERIAL: 4130 D350-748-141 B27823A, B27824A, B27825A, B27826A D350-748-241 B27830A, B27829A, B27827A, B27828A NOTE: SAND BLAST TUBES					
<div style="border: 2px solid black; padding: 5px; display: inline-block;"> 100% HARDNESS TESTED <i>8 p.c.s. → 43 HRC</i> </div> <div style="text-align: right; margin-top: 20px;"> </div>					

I hereby certify that the material covered by this release note has been inspected and tested and conforms to all specifications relevant thereto in accordance with the conditions of the contract / or purchase order.

ON BEHALF OF VAC AERO INTERNATIONAL INC.

Authorized O.C. Inspector



PAGE 02/03

VAC AERO THERMAL

905-825-8303

17:26

08/09/2006



VAC AERO
INTERNATIONAL INC.

284

PACKING SLIP

OAK 77605-1

07/28/2006

MM / DD / YYYY

PAGE: 1



HEAD OFFICE
1371 SPEERS ROAD, OAKVILLE, ONTARIO
CANADA L6L 2X5
TEL: (905) 827-4171 FAX: (905) 827-7489



QUEBEC DIVISION
7450 RUE VÉRITÉ STREPT. ST LAURENT, QUÉBEC
CANADA H4S 1C5
TEL: (514) 334-4240 FAX: (514) 334-6269

GST No.: R105468102

BILL TO: 1DAR01
DART AEROSPACE LTD.
1270 ABERDEEN ST.
HAWKESBURY, ON

SHIP TO: DART AEROSPACE LTD.
1270 ABERDEEN ST.
HAWKESBURY, ON

K6A 1K7

K6A 1K7

DATE SHIPPED	SHIP VIA	F.O.B.
07/28/2006		ORIGIN
CUSTOMER P/O No.	JOB No.	TERMS
1709		COD

LN	PART NO	DESCRIPTION	UOM	QTY ORDERED	QTY SHIPPED	B/O QTY
01	D350-CROSS TUBES		EA	8	8	0
		Process Specifications: Procedure: 4353 HEAT TREATED TO 180-200 KSI PER AMS 2759-1C MATERIAL: 4130 D350-748-141 B27823A, B27824A, B27825A, B27826A D350-748-241 B27830A, B27829A, B27827A, B27828A NOTE: SAND BLAST TUBES				
02	LC	LOT CHARGE 320LBS X \$2.26/LB		1	1	0

No claims for shortage in weight or count will be entertained, unless presented within 5 working days after receipt of materials by customer.



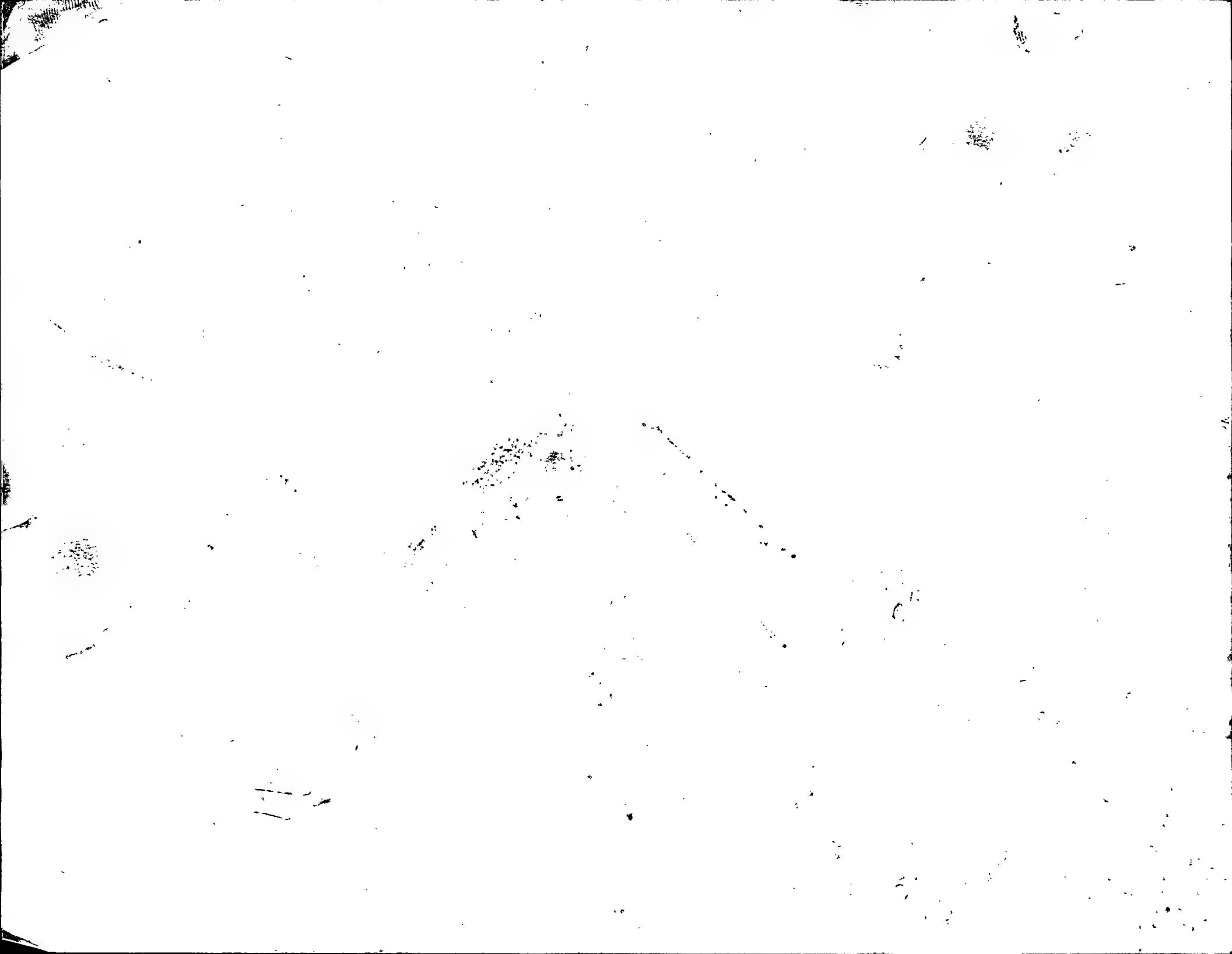
FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
2.500	$\pm .005$	2.5				
0.780/0.500	$\pm .280$.674				for DT 8870

for DT 8876

Measured by: <i>DP</i>		Audited by:		Prototype Approval:		
Date: <i>6-8-9</i>		Date:		Date: <i>06.08.09</i>		
Rev	Date	Change			Revised by	Approved
A		New Issue			KJ/RF	



Chris Provencal

From: S Shahbazian [sshahbazian@dartaero.com]
Sent: August 17, 2006 12:18 PM
To: Provencal, Chris
Subject: FW: 350 fwd Xtube OD variation

FYI

Serge Shahbazian
Design Manager
Dart Aerospace Ltd.
Tel: 613-632-3336

-----Original Message-----

From: David Shepherd [mailto:dshepherd@dartaero.com]
Sent: August 17, 2006 12:07 PM
To: 'S Shahbazian'
Cc: 'Dan Stow'
Subject: RE: 350 fwd Xtube OD variation

D350-748-141 B27825A and B27826A are acceptable to me.

David

-----Original Message-----

From: S Shahbazian [mailto:sshahbazian@dartaero.com]
Sent: Tuesday, August 08, 2006 6:48 AM
To: Shepherd, David
Cc: Provencal, Chris
Subject: FW: 350 fwd Xtube OD variation

More for your review.

Thanks
Serge

-----Original Message-----

From: Dan Stow [mailto:dstow@dartaero.com]
Sent: August 5, 2006 12:10 PM
To: sshahbazian@dartaero.com; Bill Beckett (E-mail)
Cc: chrisp@dartaero.com
Subject: 350 fwd Xtube OD variation

Bill/Serge

Please review and send to David
Thanks Dan

Attached is a photo containing the FAI sheets for the 350 fwd Xtubes Batches: 27825A and 27826A. In the last two columns renamed Actual Dims and Variance from DWG Dims are the measurements that I took after they came back from heat treating and sand blasting. Please note that the dimensions are not the same all the way around the OD of the tube, the majority of the circumferences of the tubes are within tolerance but there seems to be a "flat" spot in some places. Are the tubes acceptable?

Dan

ART AEROSPACE LTD		Work Order: 278254
Description: 35 CROSS TUBE 350 FWD		Part Number: D 350-298-141
Inspection Dwg: B	Rev: B	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST



First Article



Prototype

Actual Dims

Change from Dwg Dims

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
0.062	± 0.010	0.062	/			
4.26	± 0.030	4.26	/			
2.240	± 0.005 ± 0.000	2.242	/		Good	
2.180	± 0.005 ± 0.000	2.183	/		Good	
2.180	± 0.005 ± 0.000	2.185	/		Good	
2.237	± 0.005 ± 0.000	2.237	/		Good	
2.272	± 0.005 ± 0.000	2.275	/		Good	
2.306	± 0.005 ± 0.000	2.309	/		Good	
2.339	± 0.005 ± 0.000	2.339	/		2.335	-0.004"
2.339	± 0.005 ± 0.000	2.341	/		Good	
110.27	± 0.060	110.27	/			
0.062	± 0.010	0.062	/		Centre 2.335	Centre -0.004"
4.26	± 0.030	4.26	/		2.335	
2.240	± 0.005 ± 0.000	2.241	/		Good	
2.180	± 0.005 ± 0.000	2.183	/		2.176	-0.004"
2.180	± 0.005 ± 0.000	2.184	/		2.176	-0.004"
2.237	± 0.005 ± 0.000	2.237	/		2.234	-0.003"
2.272	± 0.005 ± 0.000	2.274	/		Good	
2.306	± 0.005 ± 0.000	2.310	/		Good	-0.004"
2.339	± 0.005 ± 0.000	2.339	/		2.330	-0.009"
2.339	± 0.005 ± 0.000	2.342	/		Good	

Measured by: BG
Date: 06.07.15

Audited by: MS
Date: 06/07/15

Prototype Approval:
Date:

Rev	Date	Change	Revised by	Approved
A		New Issue	KJ/JLM	



A Division of TECHNIMECA INTERNATIONAL Corp.
2300 Cohen, St-Laurent (Qc) H4R 2N8 Canada
Tél.: (514) 333-0030 - Fax.: (514) 333-6919

Page n°1 / 1

Bon de livraison

Packing Slip

VENDU À :
SOLD TO :

DART AEROSPACE LTD

1270, ARBEDEEN STREET
HAWKESBURY, ONT
K6A 1K7
CANADA

Expédié à :
Ship to :

DART AEROSPACE LTD

1270, ABERDEEN STREET
HAWKESBURY, ONT
K6A 1K7
CANADA

N° de certificat / Packing Slip #	7929-06-1	Rev.: 00
DATE	28 Aug 2006	
N° Travail / Job #	7929-06	
N° de commande / P.O. Number	274706	
Réf. Commande / Ref. P.O.		
Maître d'oeuvre / Prime contractor		
F.A.B. / F.O.B.	OUR PLANT	

N° Nr.	Numéro de pièce Part number	Quantité Commandée Ordered Quantity	Quantité Expédiée Shipped Quantity	Restant à expédier Balance to ship	Inspection	Quantité non-traitée Unprocessed Quantity	Quantité Acceptée Accepted Quantity	Quantité Rejetée Rejected Quantity	Quantité Réparée Repaired Quantity	N° rapport de rejet Rejection Report #
2	D350-748-241	1	1	0	Final	1		0		
						Work Order: B27828A				
3	D350-748-141	1	1	0	Final	1		0		
						Work Order: B27825A				

Matériel Processing & Inspection Description

PARTS RETURNED UNPROCESS

Material: LOW ALLOY STEEL 4130 Condition: 180 KSI

EXPEDITION COMPLETE / COMPLETE SHIPMENT.



Toute réclamation concernant cette commande doit se faire dans les 10 jours suivant la réception de la marchandise.
All claims in reference to this order must be made within 10 days from receipt of goods.

Reçu en bon état par:
Received in good order by:

ISO F10.2 Rev. Date : 23-Feb-2004



DESIGN QP	DRAWN BY QP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED #	APPROVED #	DRAWING NO. D350-748-241	REV. C SHEET 1 OF 3
DATE 06.08.14		TITLE CROSSTUBE (AS 350/355 HI AFT) SCALE NTS	
A	06.03.31	NEW ISSUE	
B	06.06.30	ADD D6018-125 & PRIME AND PAINT	
C	06.08.14	ADD CAD PLATING	

QTY	P/N	DESCRIPTION
X	D350-748-241	CROSSTUBE ASSEMBLY (AS 350/355 HI AFT)
1	D6018-125	CROSSTUBE (OR D6015-125)
2	D3502-1	SUPPORT
2	D2856-400-710	ABRASION STRIP
1	AELS-1032-225	INSERT
1	AN960JD10	WASHER
2	MS21920-20	CLAMP (PER DART SPEC. M-MS21920-20)
1	MS27039-1-10	SCREW

D350-748-141 CROSSTUBE:

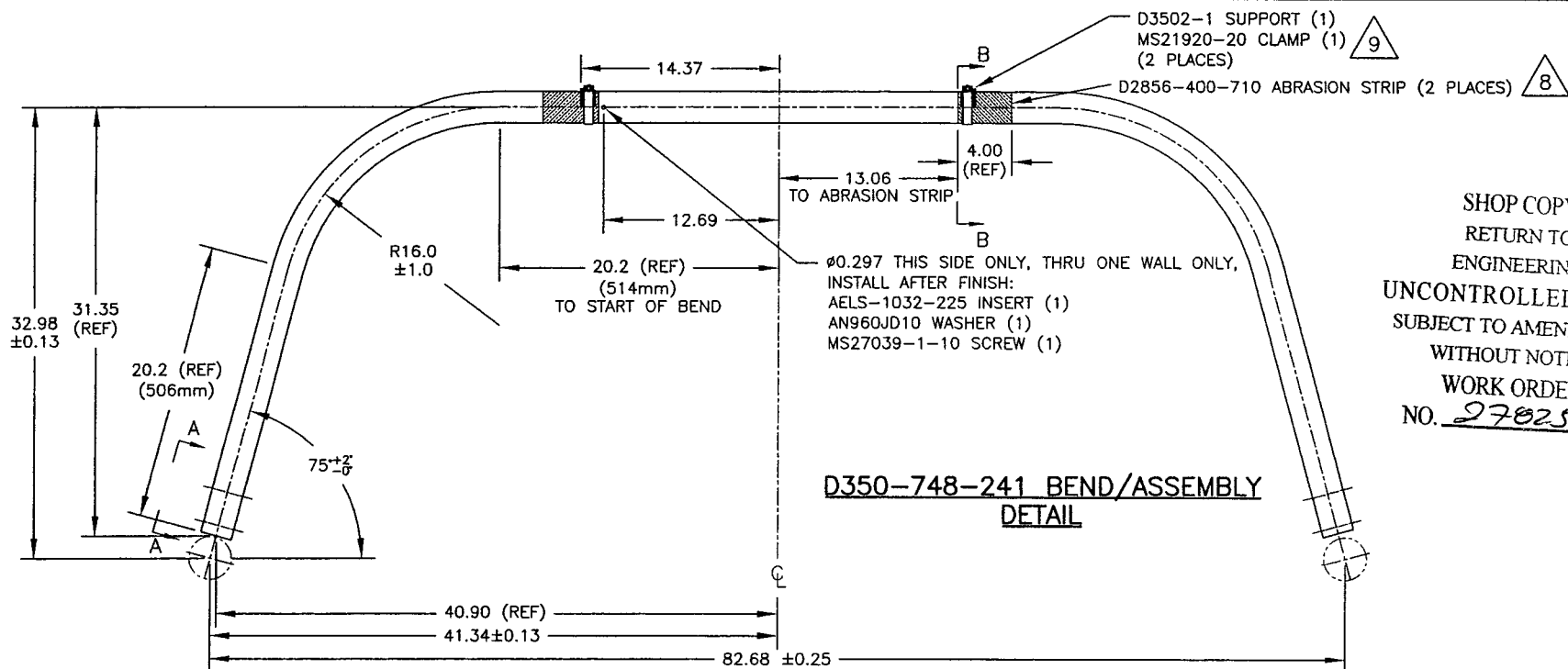
- 1) MATERIAL: MANUFACTURED FROM D6018-125 OR D6015-125
FINISHED LENGTH = 122.70 ± 0.06
- 2) MACHINE PER MACHINING DETAIL ON PAGE 3. BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALLY, TRANSITIONS SHOULD BE SMOOTH. NOTE: ALL HOLES ARE DRILLED AFTER BENDING.
- 3) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 4) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 5) HEAT TREAT TO MIN. 180 KSI PER MIL-T-6736 OR AMS 2759-1C AFTER TURNING
- 6) FINISH: CADMIUM PLATE PER QQ-P-416F, CLASS 1, TYPE II
MAGNETIC PARTICLE INSPECT PER ASTM E1444 AFTER CADMIUM PLATING
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 7) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.
- 8) INSTALL D2856-400-710 ABRASION STRIP WITH A GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D3502-1 SUPPORT, PER QSI 035.
- 9) TORQUE MS21920-20 CLAMPS 60 TO 80 IN-LB
- 10) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 11) ALL DIMENSIONS ARE IN INCHES
- 12) PART IS SYMMETRIC ABOUT CENTERLINE EXCEPT FOR $\varnothing 0.297$ HOLE.

RELEASED

06.08.15 #

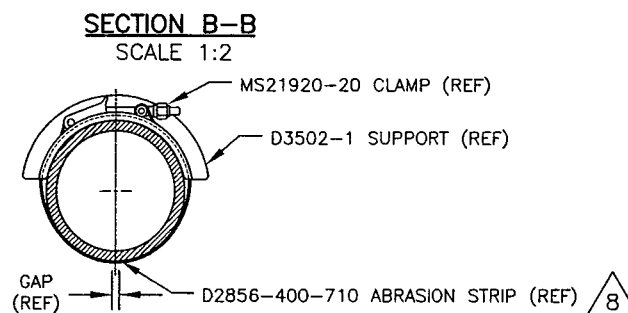
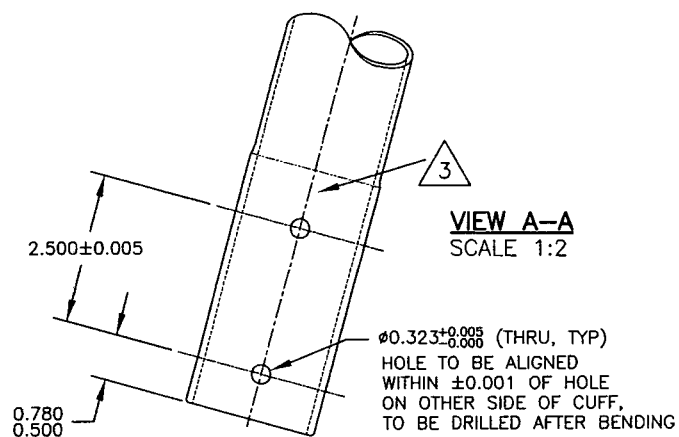
Copyright © 2006 by DART AEROSPACE LTD

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.



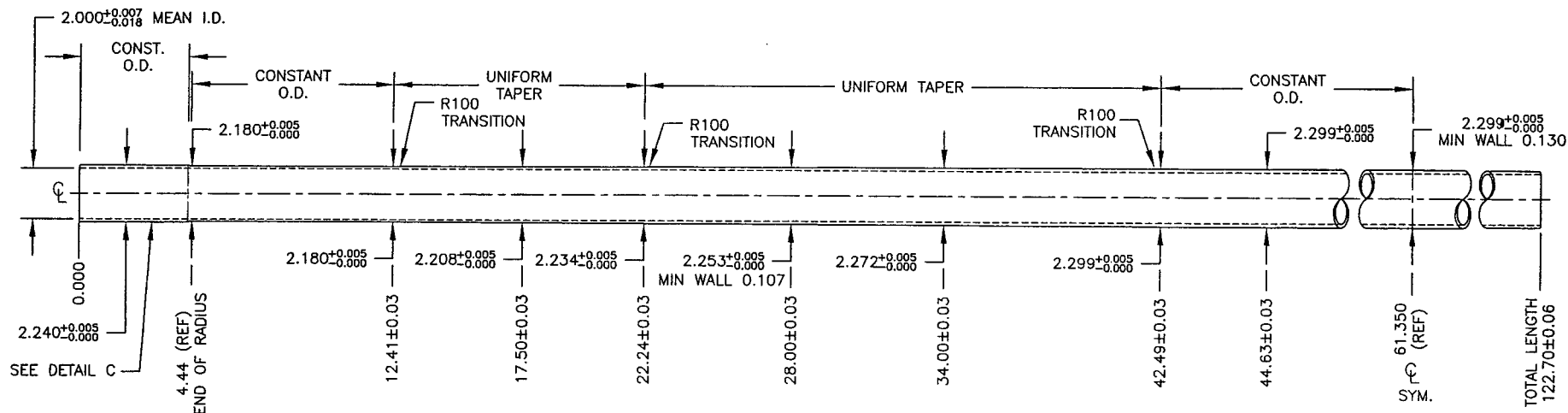
SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 27025

D350-748-241 BEND/ASSEMBLY DETAIL



RELEASED
06.08.15

COPYRIGHT © 2006 BY DART AEROSPACE LTD.		DESIGN	q	DRAWN BY	q	DART	DART AEROSPACE LTD. HAWKESBURY, ONTARIO, CANADA
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.		CHECKED	#	APPROVED	#	DRAWING NO.	REV. C
		DATE	06.08.14	TITLE		D350-748-241	SHEET 2 OF 3
				CROSSTUBE (AS 350/355 HI AFT)		SCALE	1:8

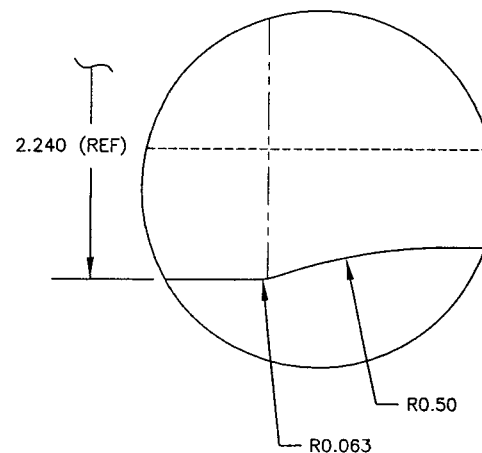
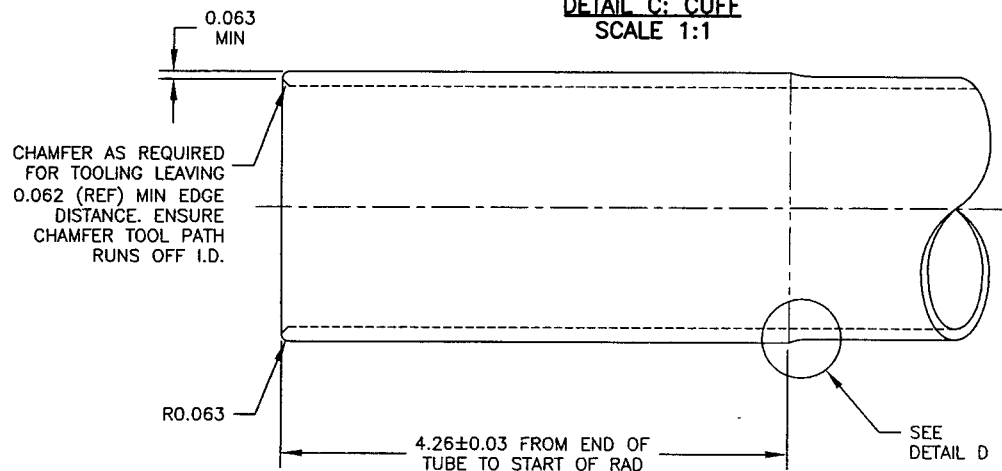


RELEASED

06.08.15

D350-748-241 MACHINING DETAIL

DETAIL C: CUFF
SCALE 1:1



SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 27825

DETAIL D:
CUFF TRANSITION
SCALE 9:1

COPYRIGHT © 2008 BY DART AEROSPACE LTD.

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL
AND IS SUPPLIED ON THE EXPRESS CONDITION
THAT IT IS NOT TO BE USED FOR ANY PURPOSE
OR COPIED OR COMMUNICATED TO ANY OTHER
PERSON WITHOUT WRITTEN PERMISSION FROM
DART AEROSPACE LTD.

DESIGN 90	DRAWN BY 90	DART	DART AEROSPACE LTD. HAINESBURY, ONTARIO, CANADA
CHECKED A	APPROVED A	DRAWING NO. D350-748-241	REV. C SHEET 3 OF 3
DATE 06.08.14	TITLE CROSSTUBE (AS 350/355 HI AFT)	SCALE 1:4	

PACKING LIST

PACKING LIST NO: 310991

DATE: 09/22/06

DART AEROSPACE
1270 ABERDEEN STREET
HAWKESBURG ON K6A 1-K7

P.O. NUMBER: 274711

TERMS: C.O.D.

QUANTITY BALANCE PART NUMBER/DESCRIPTION
SHIPPED QTY

1	0	D350-748-141	S/N: B27825A JOB: 542793
1	0	D350-748-141	S/N: B27823A JOB: 542813
1	0	D350-748-141	S/N: B27826A JOB: 542814
1	0	D350-748-241	S/N: B27830A JOB: 542815
1	0	D350-748-241	S/N: B72827A JOB: 542816
1	0	D350-748-241	S/N: B27828A JOB: 542817

1. Stress relieve at 350-400°F for 4 hours minimum
2. Cadmium plate per AMS-QQ-P-416B, Type II, Class 1 (QQ-P-416, Type II, Class 1)
3. Embrittlement relieve within 4 hours of plating at 350-400°F for 8 hours minimum
4. Magnetic particle inspect per ASTM E 1444-05. No linear indications/cracks allowed.

Qty Ins: 6 Qty Rej: 0 Qty Acc: 6

PACKING LIST

PACKING LIST NO: 310991

DATE: 09/22/06

DART AEROSPACE
1270 ABERDEEN STREET
HAWKESBURG ON K6A 1-K7

P.O. NUMBER: 274711

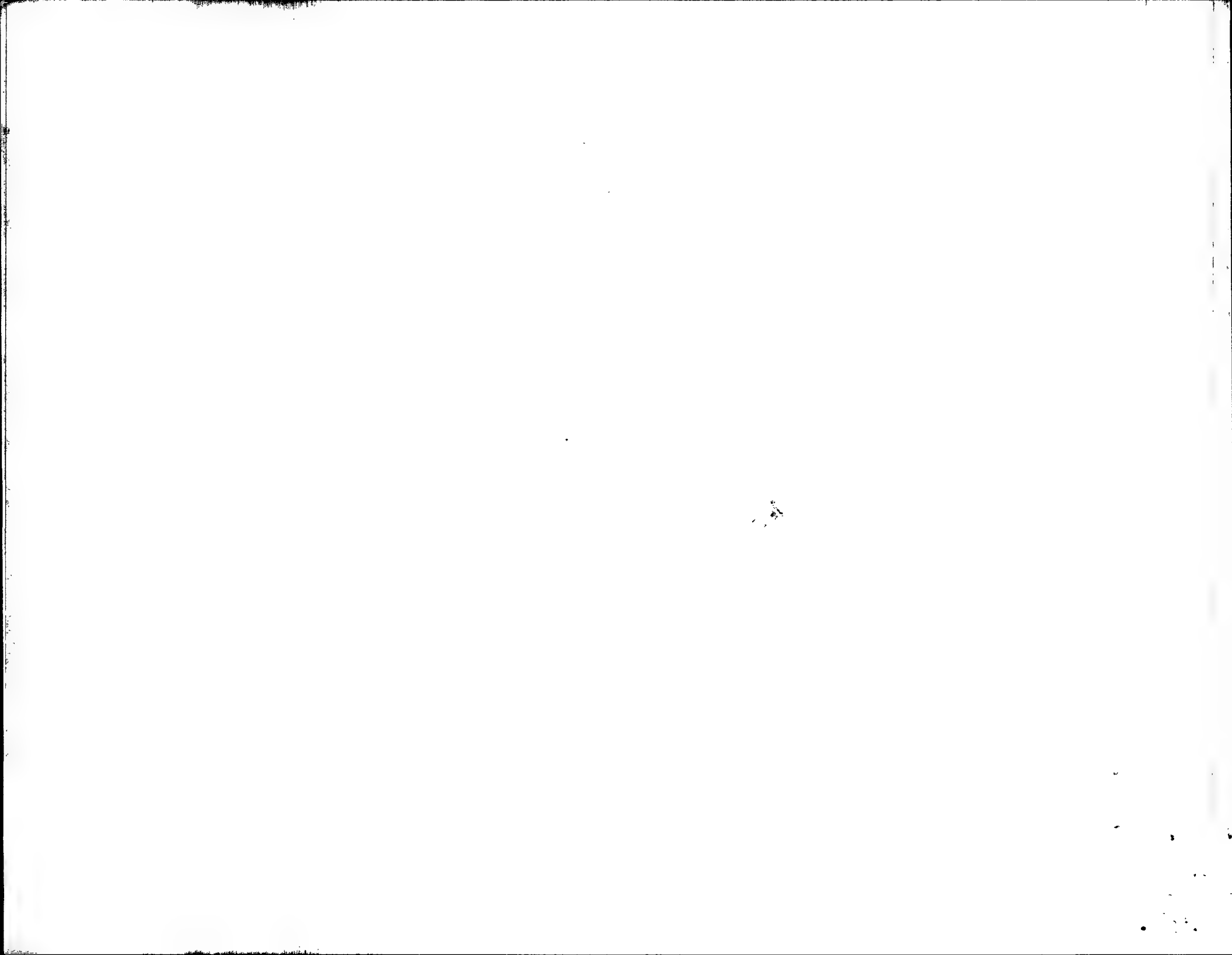
TERMS: C.O.D.

QUANTITY	BALANCE	PART NUMBER/DESCRIPTION
SHIPPED	QTY	

5. Inspect

Docn No.:
Ship Via: OTHERS

K





SOUTHWEST

United Industries, Inc.

422 S. ST. LOUIS / TULSA, OK 74120
PHONE 918-587-4161 / FAX 918-582-6158
ACCOUNTING FAX 918-585-2952

CERTIFICATION

CERT NO: 310991
DATE: 09/22/06

DART AEROSPACE
1270 ABERDEEN STREET
HAWKESBURG ON K6A 1-K7

P.O. NUMBER: 274711

P/S

QUANTITY PART NUMBER/DESCRIPTION

1	D350-748-141	S/N: B27825A JOB: 542793
1	D350-748-141	S/N: B27823A JOB: 542813
1	D350-748-141	S/N: B27826A JOB: 542814
1	D350-748-241	S/N: B27830A JOB: 542815
1	D350-748-241	S/N: B27827A JOB: 542816
1	D350-748-241	S/N: B27828A JOB: 542817

1. Stress relieve at 350-400°F for 4 hours minimum
2. Cadmium plate per AMS-QQ-P-416B, Type II, Class 1 (QQ-P-416, Type II, Class 1) ✓
3. Embrittlement relieve within 4 hours of plating at 350-400°F for 8 hours minimum
4. Magnetic particle inspect per ASTM E 1444-05. No linear indications/cracks allowed.

Qty Ins: 6 Qty Rej: 0 Qty Acc: 6

5. Inspect

WE CERTIFY THAT THE PARTS LISTED ABOVE HAVE BEEN PROCESSED IN ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE ABOVE REFERENCED PURCHASE ORDER. DOCUMENTATION IS ON FILE AND AVAILABLE FOR REVIEW



Certification

FAA Repair Station CN2R748K

Randy Bruner
Inspector

NOTE: SUBJECT TO SOUTHWEST COMPANIES, INC. STANDARD TERMS & CONDITIONS

TERMS AND CONDITIONS FOR SOUTHWEST UNITED INDUSTRIES, INC.

As members of the National Association of Metal Finishers we subscribe to the established practices of the metal finishing industry in processing your materials. These practices have been formalized and unanimously adopted by the members of this association as a Statement of Policy.

It is generally recognized that even after employing all the science known to us and capable employees with years of training, there still remain hazards in the electroplating and metal finishing fields. As a consequence and in order to avoid misunderstandings, we hereby establish the conditions under which your material will be accepted by us for processing.

1. Whenever we are given material with detailed instructions as to treatment, our responsibility shall end with the carrying out of those instructions.
2. Type of materials, heat treat, tolerances, and specifications for processing shall be given in writing prior to our processing.
3. Unless otherwise specified, we are granted a 1% scrap allowance.
4. Our liability for any cause is limited to the cost of direct labor and material of the product directly damaged by our processing or two (2) times our processing charges on such material, whichever is the lesser. Charges for our services are based on this policy limiting our liability.
5. Liability greater than that outlined in paragraph (4) above will be assumed by us only when so agreed in writing. In such event a higher charge may be made for our services.
6. Parts, materials, etc. as processed by us shall be accepted as satisfactory by you if we are not notified of damages, shortages, or other discrepancies within 30 days of your receipt.
7. Rejected parts must be returned to us for rework. Further processing or assembly of unsatisfactory parts, materials, etc., by you or any other party shall constitute a waiver of any liability on our part.
8. Where operations or processes performed by us are in the nature of salvaging parts or materials, or if parts are to be stripped and replated after being plated by other, the work is accepted on a best effort basis and no liability shall attach to us unless previously agreed upon in writing prior to processing the job. Whether or not the attempted salvage operation is successful, we will bill for and be paid for all time and material expended in this effort.
9. In the event that results of metal finishing operations are unsatisfactory due to metal imperfections, changes in grade or composition of materials, manufacturing and/or fabrication imperfections, usages for which the plating or other finishing operations was not reasonably designed, or similar conditions over which we have no control, the customer is still liable for the contracted amount for the finishing operations performed.
10. Price breaks are for quantities of parts received for processing at one time.
11. All orders are quoted f.o.b. 422 South St. Louis Avenue, Tulsa, Oklahoma, unless otherwise agreed upon in writing.

We are sure you will agree with us that these conditions are realistic and reasonable and that acceptance of your material for processing subject to these conditions will enable us to provide quality metal finishing at an economical price. Your placing of orders with us shall indicate your acceptance of our limitation of liability and the other provisions set forth herein. Southwest United Industries, Inc. is an equal opportunity/affirmative action employer.

INVOICE

DART AEROSPACE
1270 ABERDEEN STREET
HAWKESBURG ON K6A 1-K7

INVOICE NO: 310991
DATE: 09/22/06
SHIP DATE: 09/22/06
P.O. NUMBER: 274711
TERMS: C.O.D.

QUANTITY	PART NUMBER/DESCRIPTION		UNIT PRICE	AMOUNT
1	D350-748-141	S/N: B27825A JOB: 542793	1980.00	1980.00
1	D350-748-141	S/N: B27823A JOB: 542813		
1	D350-748-141	S/N: B27826A JOB: 542814		
1	D350-748-241	S/N: B27830A JOB: 542815		
1	D350-748-241	S/N: B72827A JOB: 542816		
1	D350-748-241	S/N: B27828A JOB: 542817		

1. Stress relieve at 350-400°F for 4 hours minimum
2. Cadmium plate per AMS-QQ-P-416B, Type II, Class 1 (QQ-P-416, Type II, Class 1)
3. Embrittlement relieve within 4 hours of plating at 350-400°F for 8 hours minimum
4. Magnetic particle inspect per ASTM E 1444-05. No linear indications/cracks allowed.

Qty Ins: 6 Qty Rej: 0 Qty Acc: 6

INVOICE

DART AEROSPACE
1270 ABERDEEN STREET
HAWKESBURG ON K6A 1-K7

INVOICE NO: 310991
DATE: 09/22/06
SHIP DATE: 09/22/06
P.O. NUMBER: 274711
TERMS: C.O.D.

QUANTITY PART NUMBER/DESCRIPTION

UNIT PRICE AMOUNT

5. Inspect

Docn No.:
Ship Via: OTHERS

K

Total Amount 1980.00

Chris Provencal

From: David Shepherd [dshepherd@dartaero.com]
Sent: October 3, 2006 10:03 AM
To: 'Chris Provencal'
Cc: 'S Shahbazian'; 'Beckett, Bill'
Subject: RE: 350 xtube cad plating

Chris,

I think the modified CAD plating procedure is acceptable.

As we discussed, I had some concern about the stress relieving comment on the packing slip because I didn't realize that by heating up the tubes, we would be stress relieving them. We didn't test our crosstubes in a stress relieved condition. The crosstubes we tested had compressive stresses in the tensile stress areas of the crosstube. However, because the highest stress areas are in the unbent portion of the crosstube and because I think we had so much margin in our drop test (no shock absorbers, damaged parts, overloaded, etc ...), my gut tells me that we are OK and I don't think we need to re-test.

I'm glad to hear that we are dimensionally checking the crosstubes after all the heating. I think this step should be added to the work order on receiving inspection for every crosstube.

As we discussed, I think a drawing revision is in order. I think reference to a QSI for the procedure outlined on the packing slip would be best.

David

From: Chris Provencal [mailto:cprovencal@dartaero.com]
Sent: Monday, October 02, 2006 2:17 PM
To: David Shepherd (David Shepherd)
Cc: 'S Shahbazian'; 'Bill Beckett (Bill Beckett)'
Subject: 350 xtube cad plating

David,

There is another set of 350 xtubes they want to send out tomorrow. I don't know if you've had a chance to review the cad plating issue. They're eager to get a response.

To recap:

-I originally told you that the magnetic particle was done first. That was the plan, but they ended up following the drawing (cad->magnetic). The invoice I sent you gives the correct order the work was done.

-The cad plating was done to AMS-QQ-P-416B (issued 2004 by SAE) instead of the drawing's' QQ-P-416F (issued 1991 by military). I don't see a problem with this since it's a more current issue, and the only reason we specified QQ-P-416F is because that's what the "old" never-used supplier suggested.

-The dims were re-checked after cad plating and the dimensions did not change.

-An NCR has been created to address the problem with the work orders. The bigger issue is that one was sent to a customer and we need to take action on that one asap.

If you need more info, let me know.

03/10/2006